

AMENDMENTS TO THE CLAIMS

1-17. (canceled)

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18. (withdrawn) A semiconductor light emitting device comprising:
an n-type clad layer consisting of a gallium nitride based compound semiconductor;
an active layer consisting of a gallium nitride based compound semiconductor, said active
layer being made from a material having a band gap energy smaller than that of said n-type clad
layer;
a p-type clad layer consisting of a gallium nitride based compound semiconductor, said p-
type clad layer being made from a material having a band gap energy greater than that of said
active layer, and sandwiching said active layer accompanying with said n-type clad layer.

19. (withdrawn) A semiconductor light emitting device comprising:
a substrate; and
GaN-type compound semiconductor layers stacked on the substate, the GaN-type layers
including:
at least one active layer,
at least one n-type layer, and
at least one p-type layer;
wherein a band gap energy of the one n-type layer is smaller than a band gap energy of
the one p-type layer.

20. (canceled)

21. (canceled)

22. (currently amended) A method for producing a light-emitting semiconductor device of a

group III nitride compound, comprising:

forming an N-layer of an N-type conduction, said N-layer comprising gallium nitride;

forming an emission layer of a group III nitride compound semiconductor satisfying the formula, $Al_{x_1}Ga_{y_1}In_{1-x_1-y_1}N$, where $0 \leq x_1 \leq 1$, $0 \leq y_1 \leq 1$, and $0 \leq x_1+y_1 \leq 1$, on said N-layer;

forming a P-layer of a P-type conduction, on said emission layer, said P-layer comprising aluminum gallium nitride satisfying the formula, $Al_{x_2}Ga_{1-x_2}N$, where $0 < x_2 < 1$; and

forming a contact layer of a P-type conduction, on said P-layer, said contact layer comprising gallium nitride[[],]

~~wherein a bandwidth of said N-layer is narrower than a bandwidth of said P-layer, and a potential barrier of a valence band of said N-layer is lower than a potential barrier of a conduction band of said P-layer.~~

23. (previously presented) The method for producing a light-emitting semiconductor device according to claim 22, wherein said emission layer is doped with acceptor and donor impurities.

24. (currently amended) The method for producing a light-emitting semiconductor device according to claim 22, wherein said contact layer of said P-type conductivity conduction is formed between said P-layer and an electrode.

25. (previously presented) The method for producing a light-emitting semiconductor device according to claim 22, further comprising:

forming an electrode contacting said contact layer.

26. (new) A method of producing a light-emitting semiconductor device of a group III nitride compound, comprising:

forming an N-layer of an N-type conduction, said N-layer comprising gallium nitride;

forming an emission layer of a group III nitride compound semiconductor satisfying the formula, $Al_{x_1}Ga_{y_1}In_{1-x_1-y_1}N$, where $0 \leq x_1 \leq 1$, $0 \leq y_1 \leq 1$ and $0 \leq x_1+y_1 \leq 1$, on said N-layer;

forming a P-layer of a P-type conduction, on said emission layer, said P-layer comprising aluminum gallium nitride satisfying the formula, $Al_{x_2}Ga_{1-x_2}N$, where $0 < x_2 < 1$;

forming a contact layer of a P-type conduction, on said P-layer, said contact layer comprising gallium nitride; and

doping Si into said N-layer and Mg into said P-layer, so that a potential barrier of a valence band of said N-layer is lower than a potential barrier of a conduction band of said P-layer during conduction.

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End